JOURNAL OF PLASMA PHYSICS

VOLUME 65
2001

CAMBRIDGE
UNIVERSITY PRESS

EDITORS

PROFESSOR R A CAIRNS, *School of Mathematical and Computational Sciences, University of St Andrews, St Andrews, Fife KY16 9SS, Scotland, jpp@st-andrews.ac.uk*

PROFESSOR GEORGE H MILEY, *Fusion Studies Laboratory, University of Illinois, 103 S Goodwin Avenue, Urbana, IL 61801-2984, USA, g-miley@uiuc.edu*

ASSOCIATE EDITORS

DR ROBERT L BINGHAM, *Space Science Department, Rutherford Appleton Laboratory, Chilton, Didcot, Oxfordshire OX11 0QX, England, rbi@vk.rl.ac.uk*

DR MARCO BRAMBILLA, *Max-Planck-Institut für Plasmaphysik, Postfach 1533, D-85740 Garching, Germany, mab@ipp-garching.mpg.de*

PROFESSOR ERYK INFELD, *Soltan Institute, Hoza 69, PL-00681 Warsaw, Poland, Eryk.Infeld@fuw.edu.pl*

PROFESSOR P K KAW, *Institute for Plasma Research, Bhat, Gandhinagar 382 424, Gujarat, India, Kaw@plasma.ernet.in*

PROFESSOR D B MELROSE, *Research Centre for Theoretical Astrophysics, School of Physics, The University of Sydney, Sydney, NSW 2006, Australia, d.melrose@physics.usyd.edu.au*

PROFESSOR EDWARD C MORSE, *Nuclear Engineering Department, University of California Berkeley, Berkeley CA 94720, USA, Morse@nuc.berkeley.edu*

DR RICHARD A NEBEL, *T-15, Los Alamos National Laboratory, MS K717, Los Alamos, NM 87545, USA, rick@ctrss2.lanl.gov*

PROFESSOR PADMA K SHUKLA, *Institut für Theoretische Physik IV, Fakultät für Physik und Astronomie, Ruhr-Universität Bochum, D-44780 Bochum, Germany, ps@tp4.ruhr-uni-bochum.de*

PROFESSOR FRANK VERHEEST, *Sterrenkundig Observatorium, Universiteit Gent, Krijgslaan 281, B-9000 Gent, Belgium, Frank.Verheest@rug.ac.be*

DR GARY P ZANK, *Bartol Research Institute, University of Delaware, Newark, DE 19716-4793, USA, zank@bartol.bartol.udel.edu*

Dr John P Dougherty, Founding Editor, 1967–1994

Journal of Plasma Physics (ISSN 0022-3778) is published ten times a year in January, February, April, May, June, July, August, September, October and November, by Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU and Cambridge University Press, Journals Department, 40 West 20th Street, New York, NY 10011-4211.

Five parts form a volume. The subscription price (excluding VAT, but including postage) of Volumes 65 and 66 (2001) is £496.00 (US $824.00 in the USA, Canada and Mexico) for institutions; £220.00 (US $380.00) for individuals. Single parts cost £54.00 each (US $91.00 in the USA, Canada and Mexico) plus postage. All orders must be accompanied by payment.

EU subscribers (outside the UK) who are not registered for VAT should add VAT at their country's rate. VAT registered subscribers should provide their VAT registration number.

Japanese prices for institutions are available from Kinokuniya Company Ltd, P.O. Box 55, Chitose, Tokyo 156, Japan. Prices include delivery by air.

Copies of the journal for subscribers in the USA, Canada and Mexico are sent by air to New York to arrive with minimum delay. Periodicals postage paid at New York, NY, and at additional mailing offices. *POSTMASTER*: send address changes in USA, Canada and Mexico to *Journal of Plasma Physics*, Cambridge University Press, 110 Midland Avenue, Port Chester, New York, NY 10573-4930.

Internet access This journal is included in the Cambridge Journals Online service, which can be found at http://www.journals.cup.org For further information on other Press titles, access http://www.cup.cam.ac.uk or http://www.cup.org

© Cambridge University Press 2001

CONTENTS TO VOLUME 65

Part 1 January 2001

Viscous interface instability supporting free-surface currents in a hydromagnetic rotating fluid column
YUSRY O. EL-DIB 1

On the inadmissibility of non-evolutionary shocks
S. A. E. G. FALLE and S. S. KOMISSAROV 29

The ignition brachystochrone
A. SESTERO 59

Theory of nonlinear plasma surface waves
O. M. GRADOV and L. STENFLO 73

BOOK REVIEW
Nonlinear Waves, Solitons and Chaos, 2nd edition, by Eryk Infeld and George Rowlands 79

Part 2 February 2001

Two-field transport models for magnetized plasmas
O. E. GARCIA 81

Low-frequency electrostatic waves in a bounded dusty magnetoplasma
P. K. SHUKLA and A. A. MAMUN 97

Ion phase-space vortices in 2.5-dimensional simulations
STEINAR BORVE, HANS L. PÉCSELI and JAN TRULSEN 107

Growth rate of instability of obliquely propagating ion-acoustic solitons in a magnetized non-thermal plasma
ANUP BANDYOPADHYAY and K. P. DAS 131

Numerical simulation of the excitation and evolution of high-azimuthal-mode-number coherent vortices in hollow magnetized electron columns
R. MARCHAND and M. SHOUCRI 151

Part 3 April 2001

On the level surfaces of the magnetic field in a resistive plasma
MANUEL NÚÑEZ 161

Limits of validity for orbital-motion-limited theory for a small floating collector
MARTIN LAMPE 171

Stationary structures in multi-ion plasmas with differential streaming
J. F. McKENZIE 181

Stationary waves in a bi-ion plasma transverse to the magnetic field
J. F. McKENZIE, K. SAUER and E. DUBININ 197

Nonlinear waves propagating transverse to the magnetic field
J. F. McKENZIE, E. DUBININ and K. SAUER 213

Plasma-turbulence suppression and transport-barrier formation by externally driven radiofrequency waves in spherical tokamaks
K. KOMOSHVILI, S. CUPERMAN and C. BRUMA 235

Corrigendum: Steady MHD flows with an ignorable coordinate and the potential transonic flow equation
G. M. WEBB, M. BRIO and G. P. ZANK 255

Part 4 May 2001

Role of neutral-particle bombardment in dust–dust interactions in plasmas
Ya. K. KHODATAEV, G. E. MORFILL and V. N. TSYTOVICH 257

The spectrum of electromagnetic waves in a magnetized gaseous plasma layer. Part 1. Wave dispersion
S. T. IVANOV, S. NONAKA and N. I. NIKOLAEV 273

The spectrum of electromagnetic waves in a magnetized gaseous plasma layer. Part 2. Anisotropic modes
S. T. IVANOV, N. I. NIKOLAEV, S. NONAKA and P. N. MALINOV 291

Continuous solutions of the hydrodynamic approach to cosmic-ray propagation
CHUNG-MING KO 305

Instability of higher-harmonic electrostatic dust cyclotron waves
G. SORASIO and M. ROSENBERG 319

The stability of charged-particle motion in sheared magnetic reversals
M. TSALAS, S. C. CHAPMAN and G. ROWLANDS 331

Part 5 June 2001

Relativistic electron heating in laser-produced plasmas
LITHUA CAO, TIEQIANG CHANG, WENWEI CHANG and ZONGWU YUE 353

Meromorphy and topology of localized solutions in the Thomas–MHD model
J.-D. FOURNIER and S. GALTIER 365

Evaluating the efficiency of radiofrequency heating in tokamaks: the impact of orbital topology and poloidal inhomogeneity
DIRK VAN EESTER 407

Corrigenda: The ignition brachystochrone
A. SESTERO 453

AUTHOR INDEX TO VOLUME 65 455